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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SULLIVAN, DANIEL M	

ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,721	MCCART ET AL.	
	Examiner	Art Unit	
	Daniel M Sullivan	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,15,17,18,25 and 27-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *25* is/are allowed.

6)☒ Claim(s) *1-13,15,17,18 and 27-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is a reply to the Paper filed 23 September 2004 in response to the Non-Final Office Action mailed 20 May 2004. Claims 1-13, 15, 17, 18, 25 and 27 were considered in the 23 September Office Action. Claims 1 and 25 were amended and claims 28-44 were added in the 20 May Paper. Claims 1-13, 15, 17, 18, 25 and 27-44 are pending and under consideration.

Response to Amendment

Claim Rejections - 35 USC § 101

Rejection of claims 1-13, 15, 17, 18, 25 and 27 under 35 U.S.C. 101 as encompassing nonstatutory subject matter is withdrawn. Upon further consideration, it is clear that a claim directed to "a tumor cell" cannot be reasonably interpreted as encompassing a human even if the cell might be located *in vivo*. Therefore, the claim does not include nonstatutory subject matter. In view of this it is not necessary to recite that the claim "does not encompass said mammal".

Claim Rejections - 35 USC § 112

Rejection of claims 1-6, 12, 13, 15, 17, 18 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement and lacking enablement for the full scope of the claims is withdrawn in view of the amendments thereto.

New Grounds Necessitated by Amendment

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13, 15, 17, 18 and 27-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a New Matter rejection.

The MPEP states, "[i]f new matter is added to the claims, the examiner should reject the claims under 35 U.S.C. §112, first paragraph-written description requirement. *In re Rasmussen*, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981)." (MPEP § 2163.06). The MPEP further states, "[w]henever the issue arises, the fundamental factual inquire is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed...If a claim is amended to include subject matter, limitations, or terminology not present in the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in the application" (*Id.*, § 2163.02). The introduction of claim changes which involve narrowing the claims by introducing elements or limitations which are not supported by the as-filed disclosure is a violation of the written description requirement of 35 U.S.C. 112, first paragraph. See, e.g., Fujikawa v. Wattanasin, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996).

In the instant case, independent claim 1 has been amended to recite, and newly added independent claim 28 recites, "vaccinia virus expression vector comprised of a mutation in a tyrosine kinase (TK) gene" (emphasis added). The original disclosure does not contemplate a vaccinia virus vector comprising a mutation in a tyrosine kinase gene. Instead, the teachings are directed to a vaccinia virus vector comprising a mutation in a thymidine kinase gene. The recitation of "tyrosine kinase" appears to be a typographical error and substituting "thymidine" for "tyrosine" in the claims would overcome this rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28-39, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Bodemer *et al.* (1991) EP 0 443 335 as evidenced by Kaplan, C. (1989) *Arch. Virol.* 106:127-139 and Buller *et al.* (1988) *J. Virol.* 62:866-874 (each of which has previously been made of record).

Claim construction

The rejected claims are directed to a composition of matter comprising a vaccinia virus expression vector having specific genotypic modifications, wherein said composition is present *in vivo* in mammalian cell. The recitation in the wherein statement is not afforded patentable weight because the composition recited in the body of the claim is not limited to comprising the

tumor cell and it is unclear how being present in a tumor cell distinguishes the properties of the subject matter being claimed. For example, the instant claim 28 is analogous to claiming a bicycle, wherein the bicycle is present in a particular house. It would seem that a bicycle would not become a novel invention simply because it is bounded within a particular space. This is in contrast to the instant claim 1, wherein the claimed invention comprises the tumor cell as well as the vector.

Bodemer *et al.* teaches a composition of matter comprising a vaccinia virus vector wherein said vector is constructed such that the thymidine kinase (TK) and virus growth factor (VGF) genes are inactivated (see especially page 4, line 50 through page 5, line 8 and page 6, lines 29-47). Thus, Bodemer *et al.* teaches all of the limitations of the independent claim 28. Bodemer *et al.* further teaches the composition: wherein said composition further comprises an exogenous nucleotide sequence according to claim 29 (see especially page 6, lines 51-54); wherein inactivation of the TK gene comprises inserting or substituting a nucleic acid sequence according to claims 30-33 (see especially page 4, lines 51-57); wherein inactivation of the VGF gene comprising deletion of the DNA sequence encoding the EGF receptor-binding site and insertion of the LacZ gene according to claims 34-38 and 42 (see especially page 6, lines 31-34 and the Kaplan reference cited therein; Kaplan, paragraph bridging pages 132 and 133 and the Buller *et al.* reference cited therein; and Buller *et al.*, Figure 1 and the caption thereto); wherein the vector comprises an exogenous nucleotide sequence that is a cytokine or antigen encoding gene according to claim 39 (see especially the second and third paragraphs on page 7); and wherein the expression vector is produced by a virus particle containing a virus genome wherein

expression of said genome produces a vaccinia virus having a negative TK phenotype and a negative VGF phenotype according to claim 41.

As Bodemer *et al.* teaches a composition comprising each of the limitations of the instant claims 28-39, 41 and 42, the claims are anticipated by Bodemer *et al.*

Claims 28-39, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Paoletti *et al.* (1992) WO 92/15672 (previously made of record).

Paoletti *et al.* teaches a composition of matter comprising a vaccinia virus vector wherein said vector is constructed such that the TK and virus VGF genes are inactivated (i.e., the NYVAC.2 vector in which the VGF gene is deleted from the TK negative NYVAC vector; see especially the paragraph bridging pages 127 and 128 and the second full paragraph on page 14). Thus, Paoletti *et al.* teaches all of the limitations of the independent claim 28. Paoletti *et al.* further teaches the composition: wherein said composition further comprises an exogenous nucleotide sequence according to claim 29 (see especially Examples 18-22, 25, 30, 32, 41, 45 and 46); wherein inactivation of the TK gene comprises deletion, insertion or substitution at the TK gene locus according to claims 3-6 (see especially the first and second full paragraphs on page 14); wherein inactivation of the VGF gene comprises deletion of the VGF gene, including the DNA sequence encoding the EGF receptor-binding site, according to claims 34-38 (see especially the paragraph bridging pages 127 and 128); wherein the vector comprises an exogenous nucleotide sequence that is an antigen encoding gene according to claim 39 (see especially Examples 18-22, 25, 30, 32, 41, 45 and 46); and wherein the expression vector is produced by a virus particle containing a virus genome wherein expression of said genome

produces a vaccinia virus having a negative TK phenotype and a negative VGF phenotype according to claim 41.

As Paoletti *et al.* teaches a composition comprising each of the limitations of the instant claims 28-39, 41 and 42, the claims are anticipated by Paoletti *et al.*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 28-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodemer *et al.* (*supra*) as evidenced by Kaplan, C. (*supra*) and Buller *et al.* (*supra*) as applied to claims 28-39, 41 and 42 above and further in view of any one of Lee *et al.* (U.S. Patent No. 5,851,991), Kamb (U.S. Patent No. 5,739,027), Herlyn *et al.* (U.S. Patent No. 5,622,835), Rotter *et al.* (WO 94/10575) or Spitsberg *et al.* (WO 98/08394) each of which has previously been made of record.

Bodemer *et al.* teaches that the composition disclosed therein has utility for the expression of recombinant proteins (see especially the second paragraph on page 2), which can be used to vaccinate animals (see especially paragraphs 4-6 on page 7). Bodemer *et al.* does not teach the composition comprising an exogenous nucleotide sequence selected from the group consisting of the WT1 gene, the p53 gene, the p16 gene, the Rb gene and the BRCA1 gene according to claim 40.

Lee *et al.* teaches a method of raising an antibody against pRB and utility of the antibody (see especially column 20-21); Kamb teaches a method of raising an antibody against p16 (MTS1) and utility of the antibody (see especially columns 55-56, Examples 16-18); Herlyn *et al.* teaches a method of raising an antibody against WT1 and utility of the antibody (see especially columns 4-9); Rotter *et al.* teaches the use of purified p53 protein to assay for the presence of anti-p53 antibodies in serum (see especially pages 5-6); and Spitsberg *et al.* teaches a method of producing an antibody against BRCA1 and utility for the antibody (see especially the Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bodemer *et al.*, Kaplan and Buller *et al.* with the teachings of any one of Lee *et al.*, Kamb, Herlyn *et al.*, Rotter *et al.* or Spitsberg *et al.* to produce the composition of the instant claims 12 and 13. Motivation to combine these teachings comes from the teachings of Bodemer *et al.* who teaches that the pox-virus system disclosed therein offers the advantage of efficient expression and correctly modified gene products (see especially page 5, lines 52-54).

Thus, the teachings of the instant claim 40, as a whole, would have been obvious to one of ordinary skill in the art at the time of filing.

Allowable Subject Matter

Claim 25 is allowed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel M Sullivan whose telephone number is 571-272-0779. The examiner can normally be reached on Monday through Thursday 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel, Ph.D. can be reached on 571-272-0781. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel M Sullivan, Ph.D.
Examiner
Art Unit 1636

Anne-Marie Falk

ANNE-MARIE FALK, PH.D
PRIMARY EXAMINER